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ARTICLE

## Achieving content representativeness in organizational diagnosis

Use of action groups for successful organizational change

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### ABSTRACT

An organizational diagnosis provides analysts with information on which to base and plan an appropriate intervention to improve an organization's functioning. In many instances, the data collected are from a sample of an organization's population. However, the information collected must be considered *representative* of the whole organization. In this article, we discuss the importance of response rate in organizational surveys and non-response bias in achieving the necessary representativeness. We describe an action research project in which we involved members of a high-tech organization. Our data were collected through interviews and an anonymous web survey representing 42 percent of the organization's population. We describe how we employed action groups to determine the content representativeness of our data. This step was deemed necessary before initiating the action planning step. We propose a guideline for action researchers to apply during organizational diagnoses requiring respondent anonymity.

### KEY WORDS

- action groups
- action research
- organizational change
- organizational diagnoses
- representativeness

Action research can be thought of as a participative process of collecting and analysing data about human interaction for the purpose of proposing theories, testing theories, and/or improving individual and organizational effectiveness (Reason & Bradbury, 2001). When the objective is organizational change, action research has often proceeded with a version of the four-step participative process of problem diagnosis, action planning, implementation, and evaluation (Lewin, 1946, 1947), as seen, for example, in total quality management change processes. Change practitioners who conduct organizational diagnoses expect their collected data to be *representative* of organizational conditions. In other words, data collected are typically from a sample of employees, and the issues identified from the sample are inferred to be an accurate depiction of the organization. Representativeness is important because, during diagnosis, change interventions are designed and implemented to address the issues identified. Some action researchers may not take stock of the representativeness of their diagnoses. This practice is understandable because diagnoses are often conducted under conditions of anonymity. However, the dangers of this omission are significant, for if the findings are not representative of the whole organization, the resulting changes may be ineffective at best, and at worst could result in other problem symptoms in the future. The purpose of this article is to offer what we think is a useful perspective regarding the issue of sample representativeness in organizational diagnosis. More specifically, we offer a procedure that can be used to enhance representativeness of data collected from a sample of an organization's employees.

To accomplish our purpose, we describe an organizational diagnosis in which we were recently involved. Our circumstance is one that other action researchers may have to contend with when employing survey research methods in diagnosis. We summarize our diagnostic case and integrate the methodologies we employed with some relevant information on data collection methodologies. We describe our use of *action groups* to achieve *content* representativeness in our diagnosis. We then provide a guideline for action researchers to use in conducting rigorous organizational diagnoses. This focus-group based approach can be even more powerful than traditional statistical analyses of representativeness, for it focuses on the generalizability of organizational participants' *attitudes* toward organizational change, which if aligned in this way can help propel change efforts in a positive direction.

### **A case: Specialized Aircraft Manufacturers**

Our project began as one of many organizational diagnoses that our team members had conducted. Our team was assembled shortly after our team leader (a management professor) had been contacted by the vice president of personnel for

Specialized Aircraft Manufacturers (SAM). He explained that the SAM top management team wished to have a complete diagnosis of their organization to determine which areas of their company needed improvement. Though there were no readily apparent problems according to the top managers, they wanted to be the type of organization that strives for constant improvement.

SAM had enjoyed a successful history within the regional aircraft industry. The company designs and manufactures small, fixed-wing aircraft for the commuter airline industry. SAM, which has a main office in the southeastern United States and a testing facility in the southwest, employs around 200 individuals, many of whom are engineers.

Our first step was to conduct a set of 35 (18% of the total workforce) face-to-face interviews, in which a cross-section of employees was asked a set of five basic questions:

- 1 What do you do?
- 2 What do you like about working here?
- 3 What do you dislike about working here?
- 4 What would you like to see changed?
- 5 Do you have any additional comments?

The open-ended nature of these questions allowed our team to gain an understanding of some of the concerns of *some* of the employees. In an effort to gain a more complete picture of the entire SAM workforce's attitudes, we conducted a web-based survey of all 200 employees. This anonymous survey requested participants to respond to questions (2) through (4) from the interview process described above, and included the question, 'Did you take part in an interview with our team?' We received 58 responses to the web-survey, with nine individuals indicating that they had been interviewed as part of the previous step. These two steps then, resulted in a total sample of 84 different respondents (42%).

While our team was generally pleased with the quality of these 84 interview and web-survey responses, we were rather disappointed with the resulting 42 percent response rate. We had hoped to gather information from a wider segment of the organization. The purpose of both the interviews and web survey had been to collect comprehensive information from a large, representative proportion of SAM's employees on the perceived strengths and weaknesses of the company. Such strengths and weaknesses would then become the focus of any change effort to follow. Although we were disappointed with this response rate, we knew it was common for diagnosticians to experience similar results. However, we were still left with a nagging question, 'What can we really say about this organization given this response rate?'

## Action research projects in organizations

The broadening global marketplace has made it more important than ever for organizations to adapt to changes in their environments at an ever-increasing pace. While such changes are necessary and widespread, an important precursor to those changes is often ignored – an accurate organizational diagnosis (Harrison & Shirom, 1999; Levinson, 2002; Rogers, 2000). Just as the medical diagnosis of some physical malady involves the assessment of a given physiology's symptoms, an organizational diagnosis involves the assessment of an organization's symptoms. Further exploration of these symptoms can then be used to identify root causes of such symptoms and develop options for change efforts to improve organizational functioning. Once organizational changes have been implemented, it is appropriate to conduct an evaluation to determine if change objectives have been achieved. If the data collected and analysed during diagnosis are not representative of the organization's issues, then organizational changes based on these data will likely be inappropriate. Evaluation of the changes will, hopefully, reveal whether or not the effort expended was justified by the cost of such efforts. However, if the diagnostic data are not representative, the analyst may unwittingly base an evaluation on non-representative data, further confounding the conclusions drawn regarding the change effort.

Methods by which organizational diagnoses are carried out vary according to many factors, including resource constraints, research type, and/or the degree of organizational openness and involvement. These methods include observation, interview and survey questionnaire methodologies as well as the analysis of archival data and provide researchers, consultants and managerial practitioners with insight into an organization's relative health prior to change efforts.

Table 1 contains information about the major diagnostic methodologies used by action researchers. Summarized in the table are the relevant issues (e.g. challenges) diagnosticians need to consider in applying the methodologies. The strategy we employed in our diagnosis is described as a qualitative research methodology. As noted above, we employed a sample of on-site personal interviews and a web survey. However, the on-site interviews also afforded us the opportunities to apply unstructured observation as a complementary method, which is typically used by action researchers to get a *feel* for any unique organizational situations. For example, our respondents knew they could be identified, so our methodology was obtrusive. We were aware of the possibility that the respondents might withhold crucial information for a variety of reasons, such as fear of reprisal. Additionally, respondents might provide distorted information simply because of the data collection process. Thus, being able to corroborate data collected and being able to probe with follow-up questions may be required to collect accurate data.

During our interviews we were able to clarify and corroborate respondent

descriptions of events and practices. As diagnosticians, we were sensitive to our own potential biases (Armenakis, Mossholder & Harris, 1990). Our qualitative diagnosis was designed to avoid a template diagnosis; that is, fitting the data collected from respondents into a pre-conceived framework. Furthermore, we were cautious in our analyses of the data collected, being acutely aware of the potential for error in classifying the respondents' comments into diagnostic themes. Thus, our diagnostic procedures were designed to produce an accurate diagnosis – an important factor in achieving content representativeness.

While the interview used in our case was a one-on-one, semi-structured technique (semi-structured insofar as all interviewers were working from a common script of questions, though additional questions were posed as needed), other types of interviewing methods may be used during organizational assessment. Some of these include free-form, conversational formats (i.e. unstructured), highly structured formats, and group interviews, such as focus groups (see Table 1). Although relatively time consuming, interview-based methods provide real-time opportunities for clarification and expansion of responses unavailable to organizational researchers using most survey, observational and archival data collection methods.

In addition to interviews, survey questionnaire use is a staple of much organizational research, including diagnostic work. The logic to support using questionnaires in organizational diagnoses is that they are convenient to administer. Furthermore, responses can be easily analysed, and respondents can be anonymous. In fact, a wide variety of *off-the-shelf*, *pre-fabricated* diagnostic instruments is available for use in many organizational contexts (Burke & Litwin, 1992). While some of these were developed to be comprehensive, a diagnostician must exercise caution and determine that the selected instrument is representative of the relevant issues for a particular organization. *Tailored* or *customized* surveys, on the other hand, are created for a specific target organization, and the organization's circumstances (usually determined through on-site observation and interviews) serve as the basis of its content and form. Thus, a diagnostician must make certain that the customized instrument collects data that are representative of the organization. These surveys can be crafted in such a way to obtain the types of information that are needed in a given organizational diagnosis, and, therefore, are not completely standardized across various applications. When diagnosticians use questionnaires to collect data, respondent error may be a relevant challenge. This can be addressed by applying the basic procedures for assessing and maximizing reliability of respondent data (Carmines & Zeller, 1979).

Archival data may also be collected and used effectively in organizational diagnoses. Sources such as the collected results from employee turnover, absenteeism, and/or financial performance data from previous time periods can often bolster diagnostic efforts. Archival methods, unlike the other methods, are

**Table 1** Organizational diagnostic methodologies

<i>Method</i>	<i>Data analysis</i>	<i>Respondent identity</i>	<i>Diagnostician interaction</i>	<i>Values</i>	<i>Challenges</i>
<i>Observation</i>					
• Unstructured	Qualitative	Identified	Obtrusive	Situational organizational factors observed <sup>9</sup>	Time intensive <sup>4</sup> Respondent bias <sup>5</sup> Diagnostician bias <sup>7</sup> Diagnostician error <sup>8</sup>
• Structured	Quantitative	Identified	Obtrusive	Situational organizational factors observed <sup>9</sup>	Time intensive <sup>4</sup> Respondent bias <sup>5</sup> Diagnostician bias <sup>7</sup> Diagnostician error <sup>8</sup>
<i>Individual interview</i>					
• Unstructured	Qualitative	Identified	Obtrusive	Rich data <sup>1</sup> Respondent terminology <sup>2</sup> Real time <sup>3</sup>	Time intensive <sup>4</sup> Respondent bias <sup>5</sup> Diagnostician bias <sup>7</sup> Diagnostician error <sup>8</sup>
• Semi-structured	Qualitative	Identified	Obtrusive	Rich data <sup>1</sup> Respondent terminology <sup>2</sup> Real time <sup>3</sup>	Time intensive <sup>4</sup> Respondent bias <sup>5</sup> Diagnostician bias <sup>7</sup> Diagnostician error <sup>8</sup>
• Forced-choice	Quantitative	Identified	Obtrusive	Convenient to administer <sup>10</sup> Easy to analyse <sup>11</sup>	Respondent bias <sup>5</sup> Respondent error <sup>6</sup> Diagnostician bias <sup>7</sup> Diagnostician error <sup>8</sup>
<i>Group interview</i>					
• Semi-structured	Qualitative	Identified	Obtrusive	Rich data <sup>1</sup> Respondent terminology <sup>2</sup> Real time <sup>3</sup> Situational organizational factors observed <sup>9</sup>	Time intensive <sup>4</sup> Respondent bias <sup>5</sup> Diagnostician bias <sup>7</sup> Diagnostician error <sup>8</sup>

Questionnaire survey	• Unstructured/ semi-structured	Qualitative	Anonymous	Obtrusive	Convenient to administer <sup>10</sup>	Respondent bias <sup>5</sup> Respondent error <sup>6</sup> Diagnostician bias <sup>7</sup> Diagnostician error <sup>8</sup>
	• Forced-choice	Quantitative	Anonymous	Obtrusive	Convenient to administer <sup>10</sup> Easy to analyse <sup>11</sup>	Respondent bias <sup>5</sup> Respondent error <sup>6</sup> Diagnostician bias <sup>7</sup>
Archival		Quantitative/ qualitative	Identified/ anonymous	Unobtrusive	Convenient to administer <sup>10</sup> Easy to analyse <sup>11</sup>	Diagnostician bias <sup>7</sup> Diagnostician error <sup>8</sup>

- 1 Rich – provides detailed descriptions of events and practices that can facilitate a thorough diagnosis.
- 2 Respondents' terminology – permits respondents to describe events and practices using terminology common among co-workers.
- 3 Real-time clarification – allows elaboration on events and practices.
- 4 Time intensive – requires significant amounts of time to collect and analyse data.
- 5 Respondent bias – diagnostician must be alert to respondents *systematically* distorting events and practices, for example, making inferences based on non-representative events.
- 6 Respondent error – responses to queries that are *randomly* incorrect. They may arise from respondents misunderstanding terminology used on the diagnostic instrument.
- 7 Diagnostician bias – arises when a diagnostician makes *systematic* mistakes, for example, making incorrect inferences that a situation is similar to a previously experienced situation, when in fact, the situation is dissimilar or applying a diagnostic instrument that is not appropriate for the current situation.
- 8 Diagnostician error – arises when a diagnostician erroneously draws incorrect conclusions. Such errors occur randomly, for example, erroneously classifying a behavior/response to an incorrect category.
- 9 Situational organizational factors can be described; a diagnostician is able to sense unique factors of the organization.
- 10 Convenient to administer – ease with which data can be collected from respondents.
- 11 Easy to analyse – forced-choice responses are easily converted to numerical codes that can be manipulated statistically.



unobtrusive. However, use of previous surveys or interviews must be determined to be representative if any analysis is to be considered accurate. In addition, there are situations in which, because of limited resources or organizational access, archival data may be the only information available from which diagnosticians can draw conclusions. These categories of data all serve to reveal the nature and potential causes of organizational symptoms. Thus, only through the collection of the appropriate pieces of information can effective organizational diagnosis take place, such that courses of action can be developed to address the causes of organizational symptoms.

### **Statistical equivalence and content representativeness**

In conducting organizational diagnoses, an analyst makes organization-wide inferences about issues identified from data collected from a sample of an organization's members. When assessing the quality of diagnostic data, response rate is important. However, it is possible to have a response rate as high as 90 percent, and yet the sample's responses still may not be generalizable to the population (Rogelberg & Luong, 1998). As such, response rate alone does not tell us how representative a sample's responses are of an organization-wide population. For that, response rate must be combined with tests for non-response bias before making organization-wide inferences.

Representativeness in organizational diagnosis is achieved when findings from data collected from a sample can be inferred to be statistically equivalent to those of the population. Generalizability is operationalized by collecting data from a representative random sample of employees from the total number of employees in the organization. After careful analysis, the findings are then considered to be statistically representative of the population. Statistical formulae are available to determine adequate sample sizes for various sizes of populations and desired confidence limits (Bowerman & O'Connell, 2003). For instance, if the population consists of 200 employees and an organizational researcher will tolerate a 5 percent error rate, the necessary random sample size is estimated to be 132 (Dillman, 2000, p. 207). This means that 132 individuals should be randomly selected, *and* information should be ascertained from those 132. If fewer than those 132 respond, the analyst should take actions to determine if any bias might exist from not including the responses of the non-respondents (i.e. non-response bias). Non-response bias occurs when opinions from respondents differ from those of non-respondents, if the opinions were actually known (Rogelberg & Luong, 1998).

When all members of an organization cannot be assessed, some attempt at assessing the generalizability of the responses that have been obtained during data collection is an important component of a well-managed assessment process. For

instance, simply comparing the demographic characteristics of respondents and non-respondents is one way to check whether the respondent group is drawn from a drastically differing subpopulation. If respondents only represent a subpopulation (e.g. a specific demographic or organizational level), the representativeness of any findings must be called into question. However, one must question whether the sample of respondents (given they are demographically similar to the population) express the similar *content* of the issues as the population. In order to know whether the issues identified by the sample are truly representative of the organization's issues, some type of action is necessary (Rogelberg & Luong, 1998).

### The value of action groups

Upon completion of our interviews and web-survey, we were left with 84 unique responses (from an organizational population of 200) to our diagnostic questions. We could not analyse whether any non-response bias existed because our respondents to the web survey were anonymous. Therefore, we felt we needed a supplemental step in our diagnostic process to help reinforce our belief that the diagnostic data were indeed representative of the organization as a whole. Thus, we employed *action groups* to assist us in assessing the representativeness of our responses (see Table 2).

To this end, we set up sessions with seven groups of five to seven SAM employees ( $N = 40$ ) in action groups. Half of these individuals were chosen by management, and half were chosen by a vote among employees at the various hierarchal levels of the organization to represent the viewpoints of their respective constituency. Of the elected representatives, 36 attended the action group meetings. Each action group, facilitated by a diagnostic team member, was first presented the findings of our interview and web-survey results, which our team had carefully collapsed into a set of 16 randomly ordered problem area themes. Action group members were asked whether the themes we developed were representative of the perceptions of the organizational members as a whole. After any new issues were defined and added to the pre-existing issue list, action group members rated all the issues (on a survey form) from most to least important, using a four-cell Likert-response format. Then, the rated issues were converted to rankings. These rankings indicated that in each of the action groups, the original themes we had developed during the diagnostic phase were viewed as most important and were ranked consistently above any of the *new* issues that emerged. This process reinforced our belief we had successfully uncovered the relevant issues in this organization through our earlier diagnostic steps. Thus, we concluded that the content of the 16 issues identified in our diagnosis was indeed representative of the organization. We refer to this as *content representativeness*.

Table 2 Steps in the action group process

1	Establish 5–7 person action groups, composed of roughly half individuals selected by employees through democratic elections, and half selected by management.
2	Present action groups with the findings of diagnostic results, organized into themes.
3	Discuss themes, providing specific examples where necessary, and elicit any new themes that were not included in the interviews and web survey.
4	Have action group members rate new and original themes; convert the ratings to rankings.
5	Assess content representativeness of findings by comparing the rankings of new and original themes.
6	Use action groups to proceed with action planning by eliciting feedback and suggestions based on the themes ranked as important by each group.
7	Check the usefulness and validity of action group members’ participation by using some manner of assessment such as the Action Group Survey described in Table 3.

Table 3 Action group survey

	Strongly agree	Agree	Disagree	Strongly disagree
1	I am familiar with the management practices at Specialized Aircraft Manufacturer.			
2	I was candid in discussing issues in my action group.			
3	Others in my action group were candid in discussing issues in my action group.			
4	I am satisfied with the opportunity to discuss my opinions in my action group.			
5	I am satisfied with my performance in my action group.			
6	I am satisfied with my action group’s performance in proposing solutions.			
7	The other members of my action group were respectful of the opinions expressed during our discussion.			
8	Overall, I think my action group discussion was valuable.			
9	I am willing to continue my involvement in this organizational analysis project.			
10	Please indicate how long you have been employed with Specialized Aircraft Manufacturer:			
11	Please use the space below to offer any additional comments			

Next, these action groups began action planning by generating ideas for dealing with the problem areas of the organization. We anticipated discussing all 16 problem issues at some time during the action planning step. Because we were limited in the amount of time we could devote to the action planning step at a given meeting, we used the rankings to determine the order in which we discussed problem issues. We closed the sessions by administering a questionnaire to assess individuals' feelings about their contribution to their action group's performance. This brief survey (see Table 3) included nine items regarding their perceptions of their action group's internal climate and their action group's usefulness, using a four-cell Likert-response format ranging from 'strongly agree' to 'strongly disagree'. Two sample items were: 'I am familiar with the management practices in our organization,' and 'I was candid in discussing issues in my action group.' A single item was used to assess participants' tenure within the organization. The results of this questionnaire once more reinforced our belief that we had successfully gathered representative diagnostic data across the various steps in our organizational analysis.

### Assessment guideline

The question of content representativeness is important to answer if action researchers wish to establish the high standards required of their important, far-reaching work. If change initiatives are to impact decision making at the highest levels of professionalism, the methods used to obtain those results *must* meet standards of scientific rigor – the implications of such decisions for the lives of countless organizational members and other stakeholders demand it. With these thoughts in mind, we offer the following guideline for those concerned with representativeness in organizational diagnosis:

When organizational surveys, interviews, or similar data collection methodologies are used, participation or response rate should be of interest. However, more concern should be focused on the *representativeness* of the participant sample to that of the population. When less than complete participation occurs, an organizational diagnostician should take several steps. Possible non-response bias should first be examined. When found, attempts should be made to enhance representativeness of the sample data such as through additional data collection. When non-response bias is impossible to assess, supplemental data collection methodologies with validation techniques, such as the action-group methodology we described, can be implemented. Such steps can serve to enhance the representativeness and ultimately the generalizability of data previously collected.

## Conclusions

In this article, we have attempted to answer an important question which is relevant for the organizational diagnostic process, namely, what conclusions can we draw from our responses when we are uncertain of the representativeness of the issues reported by our respondents? We described the diagnostic elements of an actual action research project in which we charged action groups to provide us with verification that the content of our diagnosis was indeed representative of the organization. As explained above, we followed basic steps to ensure that our data and their interpretation were accurate. The application of the action group concept was intended to determine the representativeness of our diagnosis.

If potential non-response bias is considered a significant limitation in making organization-wide inferences and if information regarding non-respondents simply cannot be collected (e.g. use of an anonymous survey with no descriptive data), we propose the use of a method similar to our use of action groups. It is noteworthy to emphasize that our action groups verified the importance of the organizational issues identified in our diagnosis. Our action groups also should have increased buy-in of the change process because they involved elements of democratic participation. Based on the information action-group participants provided to us, we concluded that the content issues discovered during our diagnosis were representative of the organization. This step is different from simply comparing demographic statistics of respondents with those of the organizational population. Even if such a comparison is made, one must also answer the nagging question: If the demographic statistics of the respondents are equivalent to those of the organizational population, can we infer that the content of the issues collected from the sample is the same as the organizational population? We argue that demographic similarity is an inappropriate proxy for attitudinal similarity regarding organization-wide issues.

In our diagnosis, all organization members were afforded the opportunity to anonymously provide their opinions about the organization. Exactly 42 percent participated. The formation of our action groups was based on a democratic process. Thus, these individuals were considered to be the organization's *opinion leaders*, individuals who the employees wanted representing them in improving the organization. These democratically chosen action group members confirmed the content issues of the sample of respondents. We believe this approach or a similar one will enhance the rigor and generalizability of organizational diagnoses, and thereby improve the effectiveness of change efforts.

We know that the action group members were not the same individuals who participated in the on-site interviews. We do not know how many of the action group members responded to the web survey. However, this could be easily ascertained by adding such an item to an action group survey, administered after the action group members have participated in action planning.

Action groups can similarly be charged to determine the representativeness of archival data, like previously conducted diagnoses using survey methodology. As part of the action planning step, action group members could be charged with determining the content representativeness of a diagnosis conducted in some prior time period. Then, a decision could be made to either initiate a current diagnosis or proceed with action planning using the prior diagnosis.

During the evaluation step of action research, an analyst determines whether the objectives of the change effort have been accomplished. Criteria used for this step can be obtained from archival records (e.g. costs, earnings, employee turnover). It is also quite common to use a survey research methodology and ascertain employee opinions about current conditions. Action group members can be used in the evaluation step to provide the content of the current problem issues so that the survey research methodology can be designed to assess the correct content. Thus, content representativeness can be achieved during the evaluation step. The guideline offered above can be followed to assess the representativeness of an organizational change evaluation.

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